

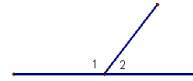
2-8 Continued

Theorem 2.3-The Supplement Theorem-If 2 angles form a linear pair, then they are supplementary.

Theorem 2.4-The Complement Theorem-If the non-common rays of two adjacent angles form a right angle, then they are complementary.

How they are used:

Given: picture



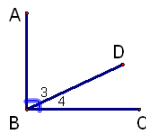
1. $\angle 1$ and $\angle 2$ are supplementary.

1. The Supplement Thm.

Oct 16-9:16 AM

Oct 16-10:55 AM

Given: $\overline{AB} \perp \overline{BC}$



1. $\angle ABC$ is a right angle

1. Def of \perp

2. $\angle 3$ and $\angle 4$ are complementary

2. The Complement Thm.

Theorem 2.6-Angles supplementary to same \angle or $\cong \angle$ s are \cong
Short-- Supplements of $\cong \angle$ s are \cong

gi: 90° 80°
 $\angle A + \angle B$ are suppl.
 $\angle C + \angle B$ are suppl.

Concl:
 $\angle A \cong \angle C$

Theorem 2.7-Angles complementary to same \angle or $\cong \angle$ s are \cong
Short-- Complements of $\cong \angle$ s are \cong

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Oct 16-11:01 AM

Prove Theorem 2.7
 Given: $\angle 5 + \angle 6$ are compl.
 $\angle 5 + \angle 4$ are compl.
 Prove: $\angle 4 \cong \angle 6$

S	R.
① $\angle 5 + \angle 6$ are compl. $\angle 5 + \angle 4$ are compl.	① Given
② $m\angle 5 + m\angle 6 = 90$ $m\angle 5 + m\angle 4 = 90$	② def of compl.
③ $m\angle 5 + m\angle 6 = m\angle 5 + m\angle 4$	③ Subst
④ $m\angle 6 = m\angle 4$	④ Refl.
⑤ $\angle 6 \cong \angle 4$	⑤ Subst.
⑥ $\angle 4 \cong \angle 6$	⑥ def of \cong
⑦ $\angle 4 \cong \angle 6$	⑦ Symm.

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How they are used:
 Given: $\angle 1 \cong \angle 3$
 Prove: $\angle 2 \cong \angle 4$

1. $\angle 1 \cong \angle 3$	1. Given
2. $\angle 1$ and $\angle 2$ are supplementary. $\angle 3$ and $\angle 4$ are supplementary	2. The Supplement Thm.
3. $\angle 2 \cong \angle 4$	3. Supplements of \cong \angle s are \cong

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Theorem 2.8-Vertical Angles are congruent

Theorem 2.9-- \perp lines form 4 right angles

Theorem 2.10-All right \angle s are \cong

Theorem 2.11-- \perp lines form congruent, adjacent angles

Theorem 2.12-If 2 \angle s are \cong and supplementary, then each is a right angle

Theorem 2.13-If 2 \cong \angle s form a linear pair, then each is a right angle.

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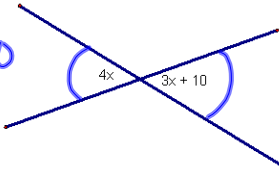
Prove Theorem 2.12
 Given: $\angle 1 \cong \angle 2$
 $\angle 1 + \angle 2$ are suppl.
 Prove: $\angle 1$ is a rt. \angle
 $\angle 2$ is a rt. \angle

Statements	Reasons
① $\angle 1 \cong \angle 2$; $\angle 1 + \angle 2$ are suppl.	① Given
② $m\angle 1 + m\angle 2 = 180$	② def. of suppl.
③ $m\angle 1 + m\angle 1 = 180$	③ Subst.
④ $2m\angle 1 = 180$	④ Subst.
⑤ $m\angle 1 = 90$	⑤ Divide
⑥ $m\angle 2 = 90$	⑥ Subst
⑦ $\angle 1 + \angle 2$ are Right \angle s	⑦ def. of Rt. \angle s

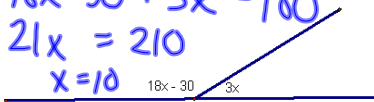
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Solve for x.

$4x = 3x + 10$
 $x = 10$



$18x - 30 + 3x = 180$
 $21x = 210$
 $x = 10$



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Given: $\angle 1$ and $\angle 2$ are supplementary
Conclusion: $m\angle 1 + m\angle 2 = 180$
Reason: Definition of supplementary angles

Given: $\angle 1$ and $\angle 2$ are complementary
Conclusion: $m\angle 1 + m\angle 2 = 90$
Reason: Definition of complementary angles

Given: $\angle 1$ is a right angle
Conclusion: $m\angle 1 = 90$
Reason: Definition of right angles

Oct 10-2:47 PM

Homework
 p.112-113 #s 16-24, 27-32, 38

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